Abstract of the Disclosure

A flywheel uninterruptible power supply has an energy storage flywheel supported in a low pressure containment vessel for rotation on a bearing system. A brushless motor/generator is coupled to the flywheel for accelerating and decelerating the flywheel for storing and retrieving energy. The flywheel is rotated in normal operation at a speed such that the generator voltage is higher than the output voltage. Power supplied to the load from the generator is a regulated output that is maintained at a substantially constant voltage level by using switching regulation of the alternating current voltage generated by the generator. The switching regulation of each generator phase occurs at a frequency equal to or less than twice the frequency of the generator alternating current. As so operated, the flywheel uninterruptible power supply efficiently maintains power to an electrical load during an interruption of primary power by supplying power generated from the flywheel generator.